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Address.

THE NEW CENTURY AND THE NEW BUILDING OF THE MEDICAL SCHOOL OF HARVARD UNIVERSITY.*

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THE Medical School of Harvard University enters, with the commencement of the present season, upon the second century of its existence. By a fortunate coincidence it takes possession at this same time of the noble edifice which a generous public has raised for the use of the teachers and students of this institution.

Yesterday; today; tomorrow. Let us look backward at the period when this school began its teachings, and mark some of the longer strides which bring the professional condition of the earlier epoch to that of our own. Let us see where we stand today, and we shall know better what to hope for the future of the teaching, the science, and the art of healing.

We are in the habit of counting a generation as completed in thirty years, but two lives cover a whole century by an easy act of memory. I, who am now addressing you, distinctly remember the Boston practitioner who walked among the dead after the battle of Bunker's Hill, and pointed out the body of Joseph Warren among the heaps of slain. Look forward a little while from that time to the period at which this Medical School was founded. Eight years had passed since John Jeffries was treading the bloody turf on yonder hillside. The independence of the United States had just been recognized by Great Britain. The lessons of the war were fresh in the minds of those who had served as military surgeons. They knew what anatomical knowledge means to the man called upon to deal with every form of injury to every organ of the body. They knew what fever and dysentery are in the camp, and what skill is needed by those who have to treat diseases often more fatal than the conflicts of the battle-field. They knew also, and too well, how imperfectly taught were most of those to whom the health of the whole community was intrusted.

Dr. John Warren, the younger brother of Dr. Joseph Warren, who fell at Bunker's Hill, was the first mover in the project of founding a medical school in connection with Harvard College, and was the first professor of anatomy and surgery. Those who remembered his teaching have spoken to me with admiration of the eloquence and enthusiasm with which he lectured. Dr. John Warren was a man of great

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energy, spirit, and ability. The lectures of the newly founded school were delivered in Cambridge until the erection of the building known as the Massachusetts Medical College, in Mason street, in the year 1815. It was no easy matter for a busy Boston practitioner to deliver a course of lectures in the University town. But Dr. Warren did not ask whether it was easy or not. "In the fulness of professional business he daily passed over the Charlestown ferry to Cambridge, there not being a bridge at that time; and sometimes, when impeded by ice, was compelled to take the route through Roxbury and Brookline to Cambridge, and to return on the same morning, after himself performing the dissections and giving a lecture, sometimes three hours long." So tells us worthy Dr. Thacher, in the Appendix to his American Medical Biography.

Benjamin Waterhouse, honorably known for having been the introducer of vaccination into America, was the first professor of the theory and practice of medicine. I remember him well, and carry the scar of the vaccination he performed on me. His powdered hair and queue, his gold-headed cane, his magisterial air and diction, were familiar to me from my boyhood. Dr. Waterhouse had his degree from Leyden, where he wrote and defended a thesis, *De Sympathia Partium Corporis Humani, eiusque in explicandis et curandis morbis necessaria consideratione*. He had some learning, which he was disposed to make the most of, or perhaps we all are if we have it, and laid himself open to the playful sallies of the students of his time, one of whom announced a course of lectures on oudenology, which was supposed to be a travesty of some of his prelections.

The first professor of chemistry was Aaron Dexter. It was the forming period of that science. Black, Cavendish, Priestley, Lavoisier, were building it up with their discoveries. A course of chemical lectures delivered in Boston or Cambridge at that day was probably, as it certainly was at a later day, very entertaining and not wholly uninstructive. Phlogiston had not definitively taken itself to the limbo of negative entities. But however crude the theories, we may be pretty sure that there was left in the student's mind a memory of startling precipitations, of pleasing changes of color, of brilliant coruscations, of alarming explosions, and, above all, of odors innumerable and indescribable.

It is sad to think that professors honored in their day and generation should often be preserved only by such poor accidents as a Sophomore's jest or a graduate's anecdote. The apparatus of illustration was doubtless very imperfect in Dr. Dexter's time, compared to what is seen in all the laboratories of today. We may admire his philosophy and equanimity, therefore, in recalling the story I used to hear about him.

"This experiment, gentlemen," he is represented as saying, "is one of remarkable brilliancy. As I touch the powder you see before me with a drop of this fluid, it bursts into a sudden and brilliant flame," which it most emphatically does not do as he makes the contact. "Gentlemen," he says with a serene smile, "the experiment has failed,—but the principle, gentlemen, the principle remains firm as the everlasting hills."

Three teachers only, where we have forty, or nearly that number! But when the great University of Gottingen was established, the illustrious Haller filled the one Chair of Botany, Anatomy, Surgery, and Medicine. I call it a Chair,—it was rather a Settee of Professorships.

It is to be regretted that we have not a list of the textbooks in use during that first period of the School. Dr. Waterhouse would naturally refer his students to the learned Gaubius, the voluminous Van Swieten, the illustrious Boerhaave. The excellent Dr. Fothergill was his uncle; the immortal Jenner was his second creator, and their names, with that of Dr. Lettsom, were often on his lips. Sydenham, Pringle, and Cullen he speaks of as being in the hands of all his students, and his references show a considerable extent of reading.

The textbooks in anatomy were probably Cheselden and Monro, perhaps Winslow, and, for those who could French, Sabatier. The Professor himself had the magnificent illustrated works of Albinus and of Haller, the plates of Cowper (stolen from Bidloo) and others. The student may have seen from time to time, if he did not own, the figures of Eustachius and of Haller. Haller's First Lines of Physiology were doubtless in the hands of most students. The works of Pott, of Sharp, and most of all of John Hunter, were taking the place of Heister and the other earlier authorities.

Smellie was probably enough the favorite in his department. What chemical textbooks Dr. Dexter put into the hands of his students in 1783 I will not venture to conjecture.

And now I will ask you to take a stride of half a century, from the year 1783 to the year 1833. Of this last date I can speak from my own recollection. In April, 1833, I had been more than two years a medical student attending the winter lectures of this school, and have therefore a vivid recollection of the professors of that day. I will only briefly characterize them by their various merits; not so much troubling myself about what may have been their shortcomings. The shadowy procession moves almost visibly by me as I speak: John Collins Warren, a cool and skillful operator, a man of unshaken nerves, of determined purpose, of stern ambition, equipped with a fine library, but remarkable quite as much for knowledge of the world as for erudition, and keeping a steady eye on professional and social distinction, which he attained and transmitted; James Jackson, a man of serene and clear intelligence, well instructed, not overbook-fed, truthful to the centre, a candid listener to all opinions; a man who forgot himself in his care for others and his love for his profession; by common consent recognized as a model of the wise and good physician: Jacob Bigelow, more learned, far more various in gifts and acquirements than any of his colleagues; shrewd, inventive, constructive, questioning, patient in forming opinions, steadfast in maintaining them; a man of infinite good nature, of ready wit, of a keen sense of humor, and a fine literary taste; one of the most accomplished of American physicians; I do not recall the name of one who could be considered his equal in all respects: Walter Channing, meant by nature for a man of letters, like his brothers, William Ellery and Edward; vivacious, full of anecdote, ready to make trial of new remedies, with the open and receptive intelligence belonging to his name as a birthright; esteemed in his specialty by those who called on him in emergencies. The Professor of Chemistry of that day was pleasant in the lecture room, rather nervous and excitable, I should say, and judiciously self-conservative, when an explosion was a part of the programme.

Those who are curious to know what handbooks we students used in 1833 will find they were nearly as follows: In anatomy, the works of John and Charles Bell, that of Wistar, and the Dublin Dissector. In physiology, Haller's First Lines and Richerand. In chemistry, Webster's edition of Brande. In surgery, Samuel Cooper's work, with his Surgical Dictionary as a book of reference. In theory and practice, Dr. Good's Study of Medicine was adopted by Dr. James Jackson and generally followed. Gregor's Practice was often seen in the student's hands, and Laennec's Treatise on Diseases of the Chest and Their Physical Signs was just coming to their notice in the form of Dr. Forbes's Translation. Denman and Dewees were the favorites in their special branches. Bigelow's Sequel to the Pharmacopoeia was much sought after by the students of this school. Like the excellent and serviceable work recently published by his successor in the Chair of Materia Medica, it was unpretentious enough for the most scrupulous teachers of the high and dry northern latitudes.

Other works read by students were Hunter on the blood, Fordyce on fever, Heberden, and of course Cullen, and the earlier standards which happened to be in their instructors' libraries. Louis was just beginning to be known among us. The lectures of Sir Astley Cooper and of Mr. Abernethy were eagerly read. One fellow-student of mine read through the three solid quartos of Morgagni. These are the principal authorities I recall as lying about our study and lecture rooms. But my memory is, no doubt, sometimes at fault.

Great stories had been reaching us for some time of the schools and hospitals of Paris. Dr. John Jackson, nephew of our old Professor, came home with news of the fine opportunities there offered. Young James Jackson, the Professor's son, was there still, writing home letters which remain on published record, to show how much of talent, zeal, and high promise was lost to the medical profession by his early death. Especially did he speak of Louis, whom he had chosen as his principal teacher, and of whom he became the favorite pupil and the very dear friend. These circumstances decided me to seek the same centre of instruction, and so, in April, 1833, I left Boston to pursue my studies in Paris. Dr. John Jackson bade me farewell with a look as if I were indeed on my way to the good Bostonian's heaven, and handed me a small square of India-rubber, his own newly-suggested pleximeter, or instrument to be used for immediate percussion, which he

wished me to show to Louis and the other great Paris doctors.

I have said something of my Boston teachers, and I will devote a few words to those whose instructions I followed in Paris, and to their most renowned professional contemporaries in other European countries, at the risk of some repetition of what I have said elsewhere.

Old Boyer, Baron Boyer, who, in spite of his title, kept his own books for sale at his own house, was still creeping around the wards of La Charité. At Hotel Dieu was the great surgeon, Dupuytren. On the other side of the river was his large and loud rival, Lisfranc. Roux, best known by his report of his medical visits to England, was operating and lecturing, —lecturing, parenthesis within parenthesis,— ovum, germinal, vesicle, germinal spot, until his embryo meaning vanished in the invisible; Velpeau, a reclaimed rustic, who by sturdy industry grew out of his wooden shoes into an erudite author and teacher and a celebrated practitioner; Civiale, the inventor of lithotrity; Ricord, whose mercurial temperament, to say nothing of his practice, displayed itself in his lively clinical promenades; these were some of the more famous surgical celebrities of fifty years since. Louis, Andral, Chomel, Rostan, Trousseau, Bouillaud were the best known teachers of clinical medicine. Cruveilhier was professor of anatomy in the École de Médecine, and Orfila, the handsome dean of the faculty, lectured upon some branches of medical jurisprudence. Two or three water-logged old professors were moored to their chairs; one of them not so very old, but with a good many barnacles about him; one formidable three-decker, Broussais, with his upper tier of guns still above the water-line, and banging away at the assailants of his famous "physiological doctrine." Some of the specialists I recall were Sichel in ophthalmology, Biett in dermatology, Bubois the younger, and a younger Baudeloeque, inventor of a certain lemon-squeezer-like machine, about as threatening to the future of the race as the invention of that other medical practitioner, Dr. Guillotin.

The works in the hands of French students were those of the great teachers and practitioners just mentioned. Jules Cloquet's Anatomy was a favorite manual. Sabatier's and Maygrier's were sometimes met with. The much more extensive and thorough work of Cruveilhier was a little later to come into common use. The great work of the same author on Pathological Anatomy was of a still later date. Bourgery's magnificent, somewhat dandified anatomy, if I may borrow this term, was in course of publication. Its showy figures were got up like opera dancers, primarily for anatomical study, and secondarily for aesthetic gratification. Magendie's Physiology had replaced that of Richerand. Boyer was still a leading authority in surgery. The name of Jean Louis Petit was frequently cited in the lectures of Marjolin, himself scarcely remembered at the present day. Bayle and Corvisart were giving place to Louis and Bouillaud. Laennec held his position as few inventors and discoverers can hope to do in the face of the after-comers who improve on their improvements.

What had been the most signal advances in the science and art of medicine between 1783 and 1833, the first half of the century we are considering?

In medical science the method of studying the human body by its constituent elements,— the General Anatomy of Bichat,—which is to common descriptive anatomy what geology is to geography, would still hold the first place if it could claim all that the microscope has done for it. It was at any rate a great onward movement, with far-reaching results for physiology and pathology.

Next to this would come the discoveries of Sir Charles Bell and Magendie of the distinct motor and sensitive functions of certain nerves and nerve-roots.

The most important practical achievement was the introduction of vaccination. I know that this practice has been and is even at the present day the subject of violent attacks and bitter prejudices. It is only very recently that our distinguished visitor—our fellow citizen,— by the female side,—the Right Honorable Sir Lyon Playfair, at home alike in the laboratory of science and when presiding over the deliberations of the British House of Commons, has had to defend it,—nobly and successfully he did it,—in that august assembly. There is always an unconvinced and irreclaimable minority. Those who believed not Moses and the Prophets would not believe though one rose from the dead to convince them. Most of us, I feel sure, are ready to say of Jenner's dis-

covery, borrowing some of Luther's words about justification by faith, that vaccination is a test *stantis vel cadentis medicinae.*

Laennec's invention of auscultation holds the next place to vaccination in the records of practical improvement during our first half century. The recognition of the affection of the kidneys known as "Bright's disease," and the separation of the too familiar and fatal malady, diphtheria, from those with which it was long confounded, are other notable advances made during the period in question.

If we compare the two half centuries, we may balance the following improvements against each other:

Against the discovery of the double nerve function the extended knowledge of the reflex function.

Against "general anatomy," the cell-doctrine, due to the discoveries made by the use of the achromatic microscope, to which we also owe the discovery of the minute organisms, so important in the history of disease.

Against vaccination we may offset surgical anaesthesia.

Against the stethoscope the medical thermometer.

We must divide the honors of lithotrity and those of ovariotomy between the two periods.

The beneficent changes in the treatment of insanity effected by the earlier labors of Pinel and Esquirol have been admirably carried on in the more recent period.

Many other and not inconsiderable improvements in medical science and art had taken place in our first half century, as may be seen in Cuvier's Report on the Progress of Natural Sciences. But the last fifty years have been not less richly productive. I can only indicate in the briefest manner some few among their acquisitions.

Modern scientific chemistry is a mystery to us who were brought up in the old school of pyrotechnic experimenters. It seems to us to make over its theories and its nomenclature about once in ten or twenty years. But that may be our ignorance. We know as much as this, that our professors teach real and most valuable practical knowledge by making the student work, and work thoroughly, in the laboratory.

Physiology is a new science, we might almost say, since the perfecting of organic analysis, the invention of the achromatic microscope, and of the numerous instruments of precision which record the vital actions and conditions.

Anatomy has aided the more exact study of regions and of sections to its earlier methods of investigation.

Operative surgery has of late years achieved its greatest triumph in the establishment of abdominal section as a legitimate and safe operation. First employed by an American surgeon, Dr. McDowell of Kentucky, in 1809, in the hands of Spencer Wells and his contemporaries it was rescued and is rescuing hundreds of lives. Tenotomy by subcutaneous section is another new and valuable operation. Plastic surgery has learned to patch deformities as a skillful housewife patches a garment. Limbs which would have been sacrificed are saved by improved methods of dressing, especially by the use of antiseptics. Resection of joints or of portions of the shaft of a bone has in many cases taken the place of amputation. Let me not forget the operation of paracentesis with aspiration of the thorax in acute pleurisy, as first practised by Dr. Henry Ingersoll Bowditch and Dr. Morrill Wyman. But enough has been said to show that the last half of our century has justified itself for existing. I shall return to some of these matters when speaking of the new edifice where they are to be subjects of instruction.

In the prevention of disease the gain has been extraordinary. The germ-theory, alluded to as one of the results of the perfecting of the microscope, has done much to account for the phenomena of many diseases and to indicate the means of arresting their development. The recognition of domestic malaria as the frequent source of disease is of vast importance. The phrase "drain fever" has saved hundreds of lives.

It is harder to speak of medical practice—the treatment of internal diseases, fevers, visceral inflammations and the like. The practice of drugging for its own sake, the fatal bequest of the English apothecary, or "general practitioner," whose profit was made on his medicine, had infected the medical profession of this country, as I believed, when some twenty and more years ago in guarded terms, often misquoted, I denounced it somewhat too epigrammatically for some of my friends of the Massachusetts Medical Society. Professor Gairdner of the University of Glasgow has recently used language much plainer than my innocent allu-

sion to the probable effect of sinking a cargo of miscellaneous drugs among the fishes. It has been objected, he says, "that the Scottish graduate in medicine was not sufficiently conversant with the details of compounding and dispensing powders, and pills, and mixtures, and above all draughts (at 2s 6d. a piece), to be taken two, three, four, or five times a day; in other words, that he had not sufficiently mastered the technical details by which his neighbor, the English apothecary, was able to accomplish the great ideal of the 'surgery-boy' type—the dispensing of immense quantities of 'physic' in the most complicated prescriptions, to pass unquestioned down the willing throats of Her Majesty's lieges." There can be little doubt that the practice thus originating influenced the whole professional public of England to a very considerable extent, and through that public introduced the over-drugging system into her colonial dependencies and the States which some of these became. However this may be, great changes have taken place within the later decades of my remembrance in the practice of medicine. Bleeding is an almost unknown operation. Of the four great remedies of Dr. Holyoke's and Dr. James Jackson's time, antimony has fallen from grace, and calomel, instead of being next the apothecary's right hand, as the letter E is to the printer's, has gone to an upper shelf, where it may be supposed to repent of its misdeeds like Simeon Stylites. Cotton Mather had said a century and a half ago, "I am not sorry that antimonial emetics begin to be disused." He said, too, more rhetorically, "Mercury, we know thee: but we are afraid thou wilt kill us, too, if we employ thee to kill them that kill us." This was a lively way of putting a thought long afterward made into a famous saying.

While old drugs and old methods have become obsolete, new drugs and new methods have come in to take their place. The first aphorism of Hippocrates, "life is short, art is long," and so on, is a glittering generality. The second aphorism is one of daily practical application, never to be forgotten. "Not only must the physician attend properly to his own duties, but he must see that the patient, the attendants, and all the external conditions are properly ordered." As the over-employment of drugs gives way to juster views, the hygienic conditions and personal attendance on the patient are like to be better cared for. The less the patient is annoyed with over-medication,—painful and disgusting remedies,—the more tractable he is like to be, and the less likely to throw his medicine out of the window, where it will kill the chickens instead of the fishes. The more attention is like to be paid to air and cleanliness and comfort, the more to the kind of nourishment and the modes and times of giving it. In proportion as the work of the apothecary diminishes, the cares of the nurse are called upon to render disease endurable by all the arts known to a skillful attendant. Little things meant a great deal in the sick room. "Will you have an orange or a fig?" said Dr. James Jackson to a fine little boy now grown up to goodly stature, and whom I may be fortunate enough to recognize among my audience of to-day. "A fig," answered Master Theodore, with alacrity. "No fever there!" said the good doctor, "or he would certainly have said an orange."

Now it is in just these little unimportant, all-important matters that a good nurse is of incalculable aid to the physician. And the growing conviction of the importance of thorough training of young women as nurses is one of the most hopeful signs of medical advancement. So much has been done and is doing that the days of the Sairey Gamps and Betsey Prigs are numbered. I cannot help saying in this connection that the Registry of Nurses fortunately connected with the Boston Medical Library, itself of comparatively recent formation, is a blessing to our community which can hardly be over-estimated. What is there in the hour of anguish like the gentle presence, the quiet voice, the thoroughly trained and skillful hand of the woman who was meant by nature and has been taught by careful discipline to render those services which money tries to reward but only gratitude can repay? I have always felt that this was rather the vocation of woman than general medical, and especially surgical, practice. Yet I myself followed a course of lectures given by the younger Madame Lachapelle in Paris, and if here and there an intrepid woman insists on taking by storm the fortress of medical education, I would have the gate flung open to her as if it were that of the citadel of Orleans and she were Joan of Arc returning from the field of victory. I have often wished that disease could be hunted by its professional antagonists in couples,—a doctor and a doctor's quick-witted wife making a joint visit and attacking the patient,—I mean the patient's mal-

ady, of course,—with their united capacities. For I am quite sure that there is a natural clairvoyance in a woman which would make her as much the superior of man in some particulars of diagnosis as she certainly is in distinguishing shades of color. Many a suicide would have been prevented if the doctor's wife had visited the victim the day before it happened. She would have seen in the merchant's face his impending bankruptcy while her stupid husband was prescribing for his dyspepsia and indorsing his note; she would recognize the lovelorn maiden by an ill-adjusted ribbon—a line in the features,—a droop in the attitude,—a tone in the voice,—which mean nothing to him, and so the brook must be dragged tomorrow. The dual arrangement of which I have spoken is, I suppose, impracticable, but a woman's advice, I suspect, often determines her husband's prescription. Instead of a curtain lecture on his own failings he gets a clinical lecture,—on the puzzling case, it may be of a neighbor suffering from the complaint known to village nosology as "a complication of diseases," which her keen eyes see into as much better than his as they would through the eye of a small-sized needle. She will find the right end of a case to get hold of, and take the snarls out as she would out of a skein of thread or a ball of worsted which he would speedily have reduced to a hopeless tangle.

I trust I have not dwelt too long on this point, which grew out of my consideration of the great change which has so largely substituted the careful regulation of all the conditions surrounding the patient for the drugging system derived from the practice of the English "Apothecaries." Like the Father of Medicine in the aphorism which I have quoted, we consider attention to these conditions entitled to precedence relatively to all active interference with the course of disease.

Yet we must not be ungrateful to the pharmacist for the useful agents, old and new, which he puts in our hands. Opium and cinchona appear in our modern pharmacopoeia with all their virtues, but freed by chemical skill of the qualities which most interfered with their utility. Mercury is no longer considered a panacea, but is still trusted for important special services. Most of the remedial plants have yielded their essential principles to chemical analysis and have got rid of the useless portions which make them bulky and repulsive. Iodine, bromine, salicine, in their various compounds have, within the present century, conferred inestimable aid in the treatment of some of the most formidable diseases. Many other new remedies, such as carbolic acid, glycerine, chloral, have been added to the list of those which are of daily use in combating particular symptoms, or are adapted to certain exceptional conditions. The method of administering remedies by inhalation has been greatly extended, and the admirable invention of the process of subcutaneous injection,—a method, I may remark, tried upon himself and made the subject of a thesis by the late Dr. Enoch Hale, a graduate of this school,—has become next to etherization, the most rapid and potent means of subduing pain and other forms of suffering. I need not speak of medical electricity, which has proved so serviceable in the treatment of nervous and muscular affections.

I despair of enumerating all the improvements which have been effected in the various specialties into which the practice of medicine has become subdivided with these 20 or 30 years. The ophthalmoscope, the improved ear speculum, the rhinoscope, the laryngoscope—hold out their mirrors to enlighten us, or open their mouths to proclaim their own value. Diagnosis has reached a wonderful degree of accuracy; prognosis has become a terrible kind of second-sight which is not always handled carefully enough; treatment gains a little with every decade. The history of therapeutics records a succession of marches and countermarches, with a slight onward movement as the total result of every completed revolution; slight, but precious to humanity.

I cannot pass over the most encouraging fact of the growth of medical libraries. We have a right to congratulate ourselves on the prosperity of that which has sprung into existence in this city within the last few years. It seems to me to mark the beginning of a new era in the medical history of the city. But what can I say of the immense library formed, but always forming, at Washington, and how can I sufficiently praise the work of Dr. Billings and his associates, one of the results of which comes before us in that colossal catalogue which is one of the best proofs of the advancing civilization of the great Republic?

It was time for the Medical School of Harvard University,—of that institution of which Massachusetts must always be proud so long as

she has anything to be proud of,—it was time for this school to plant its chief edifice in a fairer position, and erect it on a broader foundation than those with which it has been so long obliged to be contented. Let us not be ungrateful to the memory of our earlier benefactors; to the State for the grant which proved of such value in its time; to the individuals who gave land and money when the former buildings were constructed. But the little Mason street building was long ago outgrown, and that which succeeded it in turn became wholly insufficient for the needs of the school.

You will pass from beneath this hospitable roof to the new edifice in which as we trust many successive generations of medical students are to receive a large part of their instruction. As you enter its doors, as you survey its halls and lecture-rooms, its laboratories, and their appliances, some of you may be ready to exclaim, What! All this to teach a student to cut off a limb or administer a potion?

The question is a natural one, and the answer is easy. The art of healing is supported, advanced, illuminated, by the various kinds of knowledge which are recognized as belonging to the science of medicine. And the science of medicine, like all other kinds of classified knowledge, is best taught, most easily and thoroughly learned, when taught systematically, because facts are most clearly perceived and most firmly retained in the memory when presented in their serial relations. The teaching of the various branches included in a complete medical course requires ample provision for its multiplied exigencies.

You will enter or look into more amphitheatres and lecture-rooms than you might have thought were called for. But if you knew what it is to lecture and be lectured to in a room just emptied of its preceding audience, you would be thankful that any arrangement should prevent such an evil. The experimental physiologists tell us that a bird will live under a bell glass until he has substituted a large amount of carbonic acid for oxygen in the air of the bell glass. But if another bird is taken from the open air and put in with the first, the new-comer speedily dies. So when the class I was lecturing to was sitting in an atmosphere once breathed already, after I have seen head after head gently declining and one pair of eyes after another emptying themselves of intelligence, I have said, inaudibly, with the considerate self-restraint of Musidora's rural lover,—

Sleep on, dear youth; this does not mean that you are indolent, or that I am dull; it is the partial coma of commencing asphyxia.

You will see extensive apartments destined for the practical study of chemistry and of physiology. But these branches are no longer studied as of old by merely listening to lectures. The student must himself perform the analyses which he used to hear about. He must not be poisoned at his work, and therefore he will require a spacious and well-ventilated room to work in. You read but the other day of the death of an esteemed fellow-citizen from inhaling the vapors of a broken demijohn of a corrosive acid. You will be glad to see that every precaution is taken to insure the safety and health of our students.

Physiology, as now studied, involves the use of much delicate and complex machinery. You may remember the balance at which Sanctorius sat at his meals, so that when he had taken in a certain number of ounces the lightened table and more heavily-weighted philosopher gently parted company. You have heard, perhaps, of Pettenkofer's chamber, by means of which all the living processes of a human body are made to declare the total consumption and product during a given period. Food and fuel supplied; work done. Never was the human body as a machine so understood; never did it give such an account of itself as it now does in the legible handwriting of the cardiograph, the sphygmograph, the myograph, and other self-registering contrivances, with all of which the student of today is expected to be practically familiar.

I do not see any room marked on the plan of the new building as intended especially for the use of the microscope. But that a proper apartment will be assigned to this use I feel assured. I have referred to the modern achromatic microscope as having created a new era in medical science. I have no time to tell what it has done for anatomy, physiology, and pathology, besides its great services in other departments of knowledge. But to those who have never seen its miracles I can give an illustration which they will find it hard to believe I did not borrow from some new Gulliver's Travels or from some Jules Verne's imagination. Yet what I shall say is the simplest truth in the world to

any microscopic expert, and may be easily verified by any sceptic.

If we had to examine the structure of a human body by the naked eye,—or as I will venture to call it, gymnoscopic or rather gymnopic inspection,—it would make a great difference whether our subject were of the natural dimensions or whether he were a Liliputian, or a Brobdingnagian. We should lose sight of many particulars in the structure of the Liliputian which we easily detect in a man of the natural size. We should find many things plain enough in the Brobdingnagian which we do not notice in the man of ordinary dimensions on account of their minuteness. Thus, for instance, we should find that man is shingled all over, or tiled, if you will—covered with scales, more literally, just as a serpent is. The statue of Liberty, the arm of which the cast in the square at New York has made familiar to us; the statue of Carlo Borromeo at Milan, that of Bavaria, or the new statue of Germania, any one of these changed to flesh and blood would be a great source of knowledge to a gymnopic anatomist. You will observe that the naturalist could examine only a small portion of one of these colossal figures at a time. Of course the same thing is true of the microscopic man I am going to describe. He must be examined in small fragmentary portions.

The individual from whom we will suppose the portion under examination to have been taken was, we will say, of short stature; a little more than five feet, two inches in height, and weighing one hundred and twenty pounds. Our microscope, a rather powerful, but not extraordinarily powerful one, magnifies a thousand diameters. This fragment, then, thus magnified, represents an individual just one mile in height. He would ten times overtop the loftiest of the pyramids; twenty times the tallest of our steeples. He would bestride our good city from Long Wharf to Charles street. His breadth and thickness being in proportion to his height, his weight would be 120,000,000,000 (one hundred and twenty thousand million) pounds, equal to sixty million tons. He could take our State House up as we would lift a paving stone and fling it into the waters beyond Boston Lighthouse,—cleaning out that palace of the people by a summary process quicker than the praetorian bands of Domitian or Commodus would have cleaned out a Roman Senate Chamber that dared to have an opinion of its own. Such is the microscopic man as we see him piecemeal in that wonderful instrument. It is the telescope of the microcosm—the master-key to the portals of a new universe, and the student must be carefully taught how to use it.

Among the various apartments destined to special uses one will be sure to rivet your attention, namely, the anthropotomic laboratory, known to plainer speech as the dissecting room. The most difficult work of a medical school is the proper teaching of practical anatomy. The pursuit of that vitally essential branch of professional knowledge has always been in the face of numerous obstacles. Superstition has arrayed all her hobgoblins against it. Popular prejudice has made the study embarrassing and even dangerous to those engaged in it. The surgical student was prohibited from obtaining the knowledge required in his profession and the surgeon was visited with crushing penalties for want of that necessary knowledge. Nothing is easier than to excite the odium of the ignorant against this branch of instruction and those who are engaged in it. It is the duty and interest of all intelligent members of the community to defend the anatomist and his place of labor against such appeals to ignorant passion as will interfere with this part of medical education, above all, against such inflammatory representations as may be expected to lead to midday mobs or midnight incendiarism.

The enlightened legislation of Massachusetts has long sanctioned the practice of dissection, and provided means for supplying the needs of anatomical instruction, which managed with decent privacy and discretion, have served the beneficent purpose intended by the wise and humane law-givers without doing wrong to those natural sensibilities which are always to be respected.

During the long period in which I have been a professor of anatomy in this medical school, I have had abundant opportunities of knowing the zeal, the industry, the intelligence, the good order and propriety with which this practical department has been carried on. The labors superintended by the demonstrator and his assistants are in their nature repulsive, and not free from risk of disease, though in both these respects modern chemistry has introduced great ameliorations. The student is breathing an air which unused senses would find insufferable. He has tasks to perform which the chambermaid and the stable-boy would shrink from under-

taking. We cannot wonder that the sensitive Rousseau could not endure the atmosphere of the room in which he had begun a course of anatomical study. But we know that the great painters, Michel Angelo, Leonardo, Raphael, must have witnessed many careful dissections; and what they endured for art, our students can endure for science and humanity.

Among the large number of students who have worked in the department of which I am speaking during my long term of service,—nearly two thousand are on the catalogue as graduates,—there must have been some who were thoughtless, careless, unmindful of the proprieties. Something must be pardoned to the hardening effect of habit. Something must be forgiven to the light-heartedness of youth, which shows itself in scenes that would sadden and solemnize the unseasoned visitor. Even youthful womanhood has been known to forget itself in the midst of solemn surroundings. I well remember the complaint of Willis, a lover of the gentle sex, and not likely to have told a lie against a charming young person;—I quote from my rusty memory, but I believe correctly:

She trifled! ay, that angel-maid,—
She trifled where the dead was laid.

Nor are older persons always so thoughtful and serious in the presence of mortality as it might be supposed they would show themselves. Some of us have encountered Congressional committees attending the remains of distinguished functionaries to their distant place of burial. They generally bore up well under their bereavement. One might expect to find them gathered in silent groups in the parlors of the Continental Hotel or the Brevoort House; to meet the grief-stricken members of the party smileless and sobbing as they sadly paced the corridors of Parker's, before they set off in a mournful and weeping procession. It was not so; Candor would have to confess that it was far otherwise; Charity would suggest that Curiosity should withdraw her eye from the keyhole: Humanity would try to excuse what she could not help witnessing; and a tear would fall from the blind eye of Oblivion and blot out their hotel bills forever.

You need not be surprised, then, if among this large number of young men there should have been now and then something to find fault with. Twice in the course of thirty-five years I have had occasion to rebuke the acts of individual students, once in the presence of the whole class, on the humane and manly sympathy of which I could always safely rely. I have been in the habit of considering myself at liberty to visit the department I am speaking of, though it had its own officers; I took part in drawing up the original regulations which governed the methods of work; I have often found fault with individuals or small classes for a want of method and neatness which is too common in all such places. But in the face of all peccadillos and of the idle and baseless stories which have been circulated, I will say, as if from the chair which I no longer occupy, that the management of the difficult, delicate, and all-important branch committed to the care of a succession of laborious demonstrators, as I I have known it through more than the third of a century, has been discreet, humane, faithful, and that the record of that department is most honorable to them and to the classes they have instructed.

But there are better things to think of and to speak of than the false and foolish stories to which we have been forced to listen. While the pitiable attempt has been making to excite the feelings of the ignorant against the School and University, hundreds of sufferers throughout Christendom, — throughout civilization, — have been blessing the name of Boston and the Harvard Medical School as the source from which relief has reached them for one of the gravest injuries, and for one of the most distressing of human maladies. I witnessed many of the experiments by which the great surgeon who lately filled a chair in Harvard University has made the world his debtor. Those poor remains of mortality of which we have heard so much have been of more service to the human race than the souls once within them ever dreamed of conferring. Dr. Bigelow's repeated and searching investigations into the anatomy of the hip-joint showed him the band which formed the chief difficulty in reducing dislocations of the thigh. What Sir Astley Cooper and all the surgeons after him had failed to see, Dr. Bigelow detected. New rules for reduction of the dislocation were the consequence, and the terrible pulleys disappeared from the operating amphitheatre. Still more remarkable are the results obtained by Dr. Bigelow in the saving of life and the lessening of suffering in the new method of operation for calculus. By the testimony of those renowned English surgeons, Sir Henry Thompson and Mr. Erichsen, by the

award of Dr. Bigelow of a sexennial prize founded by the Marquis d'Argenteuil, and by general consent, this innovation is established as one of the great modern improvements in surgery. I saw the numerous and patient experiments by which that priceless improvement was effected, and I cannot stop to moan over a scrap of integument, said to have been made imperishable, when I remember that for every lifeless body which served for these experiments a hundred or a thousand living fellow-creatures have been saved from unutterable anguish, and many of them from premature death.

You will visit the noble hall soon to be filled with the collections left by the late Professor John Collins Warren, aided by other contributors, and to the care and increase of which the late Dr. John Jackson of precious memory gave many years of his always useful and laborious life. You may expect to find there a perfect golgotha of skulls, and a platoon of skeletons, open to the sight of all comers. You will find portions of every human organ. You will see bones softened by acid and tied in bow-knots; other bones burned until they are light as cork and whiter than ivory, yet still keeping their form; you will see sets of teeth from the stage of infancy to that of old age, and in every intermediate condition, exquisitely prepared and mounted; you will see preparations that once formed portions of living beings now carefully preserved to show their vessels and nerves; the organ of hearing exquisitely carved by French artists; you will find specimens of human integument, showing its constituent parts in different races; among the rest, that of the Ethiopian, with its cuticle or false skin, turned back to show that God gave him a true skin beneath it as white as our own. Some of these specimens are injected to show their blood vessels; some are preserved in alcohol; some are dried. There was formerly a small scrap, said to be human skin, which had been subjected to the tanning process, and which was not the least interesting in the series. I have not seen it for a good while, and it may have disappeared, as the cases might happen to be open while unscrupulous strangers were strolling through the museum. If it has, the curator will probably ask the next poor fellow who has his leg cut off for permission to have a portion of its integument turned into leather. He would not object, in all probability, especially if he were promised that a wallet for his pocket, or a slipper for his remaining foot, should be made from it.

There is no use in quarrelling with the specimens in a museum, because so many of them once formed a part of human beings. The British Government paid fifteen thousand pounds for the collection made by John Hunter, which is full of such relics. The Hunterian Museum is still a source of pride to every educated citizen of London. Our foreign visitors have already learned that the Warren Anatomical Museum is one of the sights worth seeing during their stay among us. Charles Dickens was greatly interested in looking through its treasures, and that intelligent and indefatigable hard worker, the Emperor of Brazil, inspected its wonders with as much curiosity as if he had been a professor of anatomy. May it ever remain sacred from harm in the noble hall of which it is about taking possession! If violence, excited by false outcries, shall ever assail the treasure house of anthropology, we may tremble lest its next victim shall be the home of art, and, ignorant passions once aroused, the archives that hold the wealth of literature perish in a new Alexandrian conflagration. This is not a novel source of apprehension to the thoughtful. Education, religious, moral, intellectual, is the only safeguard against so fearful a future.

To one of the great interests of society, the education of those who are to be the guardians of its health, the stately edifice which opens its doors to us for the first time today is devoted. It is a lasting record of the spirit and confidence of the young men of the medical profession, who led their elders in the brave enterprise, an enduring proof of the liberality of the citizens of Boston and of friends beyond our narrow boundaries, a monument to the memory of those who, a hundred years ago, added a School of Medicine to our honored, cherished, revered university, and to all who have helped to sustain its usefulness and dignity through the century just completed.

It stands solid and four-square among the structures which are the pride of our New England Venice,—our beautiful metropolis, won by well-directed toil from the marshes and creeks and lagoons which were our inheritance from nature. The magnificent churches around it let in the sunshine through windows stained with the pictured legends of antiquity. The student of nature is content with the white rays that

show her just as she is; and if ever a building was full of light,—light from the north and the south; light from the east and west; light from above, which the great concave mirror of sky pours down into it; this is such an edifice. The halls where Art teaches its lessons and those where the sister sciences store their collections, the galleries that display the treasures of painting and sculpture, are close enough for agreeable companionship. It is probable that in due time the public library with its vast accumulations will be next-door neighbor to the new domicile of our old and venerable institution. And over all this region rise the tall landmarks which tell the dwellers in our streets and the traveller as he approaches that in the home of science, arts, and letters, the God of our fathers is never forgotten, but that high above these shrines of earthly knowledge and beauty are lifted the towers and spires which are the symbols of human aspiration ever looking upward to Him, the Eternal, Immortal, Invisible.

Original Articles.

NOTES ON USE OF OBSTETRICAL FORCEPS.

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IN this paper it is the purpose of the writer to give definite directions for use of forceps in obstetrics. My experience at the hospital with house surgeons and in private practice as a consultant, leads me to the conclusion that the mistakes in operative obstetrics are made because of failure, on the part of the operator, to grasp the fundamental theoretical and practical principles underlying the application of forceps.

If this paper will make these principles more clear, then I shall feel justified in taking up space in the JOURNAL.

Indications for Forceps.

Any disproportion between size of pelvis and presenting part; any abnormal position of presenting part; abnormal shape of pelvis as well as abnormal size of pelvis; faulty position of uterus (preventing head entering brim).

In Interests of Child. Disturbance in rhythm of foetal heart; increased rapidity or slowing; rapidly increasing caput, or other signs of increased pressure; prolapsed cord.

In Interests of Mother. Uterine inertia (distinguish from inertia of recti muscles); interpartum hemorrhage; eclampsia; heart disease (where physical strain may do injury); rigid pelvic floor; signs of maternal exhaustion.

Contra-Indications.

Such disproportion between pelvis and foetus, as to give rise to reasonable doubt as to ability to deliver living baby (smallest sized conjugate, justifying forceps is 3¼ inches); hydrocephalus; monstrosities of certain types; intercurrent disease, which might obviate operative procedure.

Classification of Forceps.

High Forceps. Floating head or head just engaged in brim.

Median or Low Forceps. Head well engaged in brim to floor of perineum. (May divide this into median A and B, depending upon level in pelvis.)

Low Forceps. Presenting part on perineum (through inter-spinal diameter).

Type of Forceps.

"Ordinary." Have both a cephalic and pelvic curve and traction is made from shanks or handles. (Ones usually used.)

Straight. Have only a cephalic curve and are applicable for very low work.

Fenestrated. Open fenestra in blades.

Solid Blades one solid piece, no opening (uncommon in this section).

Axis-traction. Should be used on any high or median which is hard. When ordinary forceps are placed on a head which is above brim or high in excavation, the handles point towards floor and low on perineum. Traction, in this position is difficult to exert in proper direction. With patient on table in lithotomy position the axis of inlet is nearly a horizontal direction, while the axis of outlet is at a tangent; with the axis of the cavity of pelvis describing an arc on the symphysis as a center; thus it can be seen that the line of traction must shift, to conform with the anatomical variations. Therefore, with a head at the brim, the traction must be downward in order to bring head into excavation and, as said above, this line of traction is difficult by direct pull on handles of forceps. To overcome this difficulty, rods have been inserted at base of blades, so that any force exerted is from this point and no matter what the position or level of operator's hands, on handles of traction rods, the axis of traction remains the same and in the lithotomy position, this is

downward and backward. This downward traction should be continued until the head is well down and then it should be remembered that we desire our force to be outward until floor of perineum begins to bulge, when traction is in curve of Carus. With these latter principles in mind, use of axis-traction rods should be discontinued after head is well into excavation. When in low stage, some operators like to shift to a smaller and lighter type of forceps because bulk of axis-traction forceps are more apt to overstretch perineum. In taking off forceps, for any reason, same care should be taken as in the application, lest we injure soft parts; and, as a rule, the last blade applied is removed first.

Anesthesia. It is usual to place patient under complete anesthesia, but some operators let patient run "light" in order to get the benefit of natural uterine contractions. Incomplete anesthesia should always be used in a case of true uterine inertia because of increased liability to post-partum hemorrhage in this condition. If operator is in doubt as to line of traction it is well to let patient recover until uterine contractions recur and then see direction in which handles of locked forceps move.

Conditions Necessary for Forceps.

Complete cervical dilatation; ruptured membranes; exact knowledge of presenting part and position of this part; no such disproportion or anatomical anomaly as to prevent delivery.

Position of Patient.

Lateral or side, with limbs flexed on abdomen.

Lithotomy or on back (most common in this section of the country). If lithotomy position is used, with limbs flexed on abdomen or held in stirrups, true conjugate is made smaller and therefore in high forceps Walcher's position should be used. This position increases conjugate about one-fourth of an inch, which may be vital in a tight-fitting case; it is obtained by fixing sacrum firmly at edge of table, not over edge and allowing limbs to drop prone to each side. While using this position to enlarge inlet it must be remembered that it also lessens size of outlet, therefore, after head is well into excavation (and shoulders in some cases) we should flex limbs again on abdomen, increasing diameter of outlet.

General Rules of Technic.

Examine patient just before introduction of forceps, and ascertain if primary conditions for application are present, *viz.*, full cervical dilatation; ruptured membranes; position of presenting part.

Lock forceps outside vulva. Choice of blades, right or left, may depend on position of head, but in general remember right blade locks on top of left and first blade inserted lies below second; therefore, if right blade is introduced first it will have to be rotated or manipulated until it lies on top of left and thus be in position to lock. This may be difficult and result in damage to soft parts, therefore it is a good general rule to introduce left blade first.

In introducing blades use no force. If insertion is made correctly blades will almost fall into place.

Method of Introduction. Two general methods: (1) Forceps held so that handles rest in patient's groin and tip enters vagina and then allowed to "wander" into place; (2) forceps held so that handle is over abdomen in line with umbilicus and tip enters vagina, meeting presenting part, and then "wanders" into place. No particular advantage in either.

Cephalic and Pelvic Application. We can use either of these applications, a combination of the two, and one which is neither pelvic nor cephalic.

Cephalic application is the ideal and one that should be strived for in every case, though not always possible of accomplishment. In this type we proceed as follows: Examining hand enters vagina until head is made out; if cervix is not fully dilated, it is now dilated to full and fingers of hand inserted between cervix and head. Search is now made for ear, position of latter is noted, when found, and also direction in which helix of ear points. If helix points towards left and upward we know that position must be O-L-A, because helix points towards occiput and thus occiput must be to left and anterior; proper blade is selected and tip inserted, as directed in previous part of paper, until presenting part is met; then blade is guided by examining fingers until cephalic curve of blade fits over parietal bone. Same procedure is carried out with other blade and blades locked, bringing cephalic curve of both blades over parietal bones, and therefore line joining tips is in bi-parietal diameter, the ideal application; and, let me repeat, this is accomplished by direct guidance of forceps into a definite position by the operator.

Pelvic application is where the forceps are introduced in such a manner that the pelvic curve

of the forceps follows the curve of maternal pelvis; and, when locked, the points of contact between forceps and head are a matter of good fortune and not ones definitely chosen by operator. This application usually results in an oblique diameter being grasped. A pelvic and cephalic combination is obtained only when head is directly antero-posterior, which is not common except in a very low forceps. In this case the sagittal suture is directly antero-posterior and at the same time at right angles to transverse diameter of pelvis: therefore, line joining tips of blades in a pelvic application is at right angles to sagittal suture and in bi-parietal diameter.

Inability to apply forceps, either by cephalic or pelvic application, may be encountered, and such a case as a transverse where it is impossible by reason of promontory of sacrum or pubes to make a cephalic application and we do not wish to make a pelvic, then we apply forceps in an oblique diameter. A true cephalic application is best, *i.e.*, line joining tips parallel to bi-parietal diameter, and thus least compression to foetal head, least danger of slipping, less danger of injury to soft parts of mother and child. Oblique is second choice, *i.e.*, line joining tips of blades parallel to one of the long oblique diameters, and thus compression is not as much as in occipto-frontal diameter; danger of slipping not as great as in latter. Third, is pelvic application in transverse position. This is the worst application and one to be avoided, and one that is avoidable. In this application we have tips of blades in line of sagittal suture, with one blade over frontal bone and the other over occipital; this gives undue pressure on head, great liability to slipping and great danger of injury to child's face.

Application to Occiput in Various Positions.

O-L-A. Left blade is posterior; right blade anterior, tips of blades point toward left; sagittal suture in right oblique diameter of pelvis.

Right hand or fingers of right hand, depending upon level of head in pelvis, are placed in vagina and allowed to ascend until they meet head; if head is well up, examining hand is placed between cervical tissue and head, and if at this time it is found that cervix is not fully dilated, it must be attended to at once. Search is now made for left ear, which is posterior, and finding it, verify position by noting direction in which helix points, if O-L-A, helix of ear points towards left side and upward. Now grasp handle of left blade lightly with left hand, introduce into vagina, as directed in previous part of paper, and allow tip of blade to run along palmer surface of hand or fingers until cephalic curve of blade can be fitted directly over posterior ear; repeat manoeuvre on right side, remembering, in this case, right ear is anterior; lock forceps, and if blades are in proper position they will lock with ease and with shanks in close approximation. If they do not lock with ease, or if handles are far apart, you probably have not a good application, as probably the left blade shifted from its ideal location during the introduction of the right blade and it is well to remove the right blade, reëxamine position of left and reapply right blade; assuming that blades lock properly, before exerting traction examine once again and thus make doubly sure of your position of cephalic curve of blades. During these manipulations do not use force; if guiding hand or fingers are in proper place and tips of forceps run along fingers as guides, they should "wander" into place without trouble and when obstruction is encountered, it is usually due to tip getting caught in fold of vagina, child's scalp or in cervical cul-de-sac, and thus outside rim of cervix (reason why care should be taken fully to dilate cervix and be sure guiding fingers are within cervical rim); in case of obstruction, withdraw blade an inch or two and then move forward again; if obstruction still persists, withdraw blade outside vulva and reëxamine, with care, to ascertain the cause; *do not use force* to push blade by obstruction. Assuming application is satisfactory, traction is now exerted by grasping forceps shanks firmly with hand, arms, and elbows close to sides, not with arms extended and body thrown backward; fingers of free hand rest against head, especially in first few tractions, to make sure head is descending and not forceps slipping over head; traction in mid forceps is downward and outward until bi-parietal diameters are by inter-spinal line; then forward and outward until perineum begins to bulge and small fontanelle appears under pubes; then upward and forward in curve of Carus until complete delivery (theory of line of traction discussed more at length under Axis-Traction). When head begins to crown it is well to remove forceps blades (some do not remove blades); the last blade applied should be removed first, and in its removal care must be exercised not to damage soft parts. During de-

livery traction must be intermittent and not too prolonged at any one period, but simulate natural labor pains as near as possible; during intermissions the blades should be loosened to relieve pressure on child's head. When head is on perineum every precaution should be taken to protect latter, as some tear is the rule, and severe lacerations may take place if careless or too much traction is used and if good vision of perineal field is obscured by vaginal discharge, and thus the beginning of a tear not observed.

In the pelvic application of an O-L-A, forceps are introduced as above, but are not applied to head by direct guidance of hand into a known position but "wander" into pelvis, conforming to pelvic curve of maternal pelvis, and when locked we trust to good fortune that cephalic curve of forceps will approximate child's head in a "fair" position, and this is usually an oblique application; that is, one blade is slightly anterior to ideal position and is thus over a portion of occipital bone, and right blade is slightly posterior over temporal bones; line joining tips of blades is in long oblique diameter. As said in previous part of paper, this application is most common and is better than transverse application but with a long or hard "pull" it is more liable to slipping of blades and undue compression of foetal head than a cephalic application. Traction with remissions is practised as for cephalic; but during remissions, when forceps are loose, we may be fortunate and get a rotation within forceps, so that on relocking, find shanks come closer together as a result of more perfect coaptation of cephalic curve of blades to bi-parietal diameter. Delivery is accomplished as above.

O-R-A. In a right anterior position the right ear is posterior and left ear anterior, the opposite of O-L-A; tips of blades point towards right and sagittal suture is in left oblique diameter. In applying blades we have two choices, right or left blade first. If left blade is introduced first as a cephalic application, it will "wander" anterior; right will "wander" posterior; this application is easier as blades lock at once, and in a tight fit this may be a great advantage. If right blade is inserted first, it is guided by left hand, and after application to desired position, left blade is introduced; but now we have left blade above right and thus in no position to lock, so that in order to lock, right blade must be rotated around left until handle of latter comes below right, or left must be so depressed that same result is accomplished. These manipulations may lead to severe laceration and injuries to both mother and child, and I, therefore, recommend introducing left blade first, as in O-L-A, under ordinary conditions. Traction, etc., as above, in O-L-A.

O-D-P. This position is one of the bugbears of obstetrics and the treatment of which varies with different obstetricians. I will try to give a résumé of all possibilities.

With occiput posterior and to the right, we have the sagittal suture in the right oblique pelvic diameter; the head usually, in some degree, extended and the largest diameters of foetal head occupying the smallest diameters of maternal pelvis. In connection with our other difficulties we have, usually, a large caput from long continued pressure and an exhausted mother from long continued labor. Our first choice of procedure should be to change the R-O-P to an R-O-T, or better, to R-O-A, by manual rotation or posture treatment (this latter I have had little success with); manual rotation is accomplished in this manner; left hand is introduced into vagina until head can be firmly grasped, with hand so rotated that fingers grasp posterior surface and thus palmer aspect of hand is pointed upward and to the right; if head is impacted, impaction is broken up by gentle manipulation and then occiput is rotated towards right side to an R-O-T or R-O-A; this is facilitated by right hand or assistant pushing on shoulders and buttocks of child through abdominal wall. With head now rotated to O-R-A, hold it, if possible, in this position by pressure through abdominal wall or by vaginal hand and apply forceps for this R-O-A position in usual way. Unfortunately the head does not always stay "put" after manual rotation and we find that during relaxation of grasp, incident to application of forceps, that head has rotated back to O-D-P. If, after reasonable attempts have been made to apply forceps to rotated head we find it impossible to retain it in its new position, then some other form of procedure must be taken. This same applies to R-O-T position, where head cannot be retained long enough to obtain a good application of forceps.

We can now consider rotating head to hollow of sacrum and thus assuming a direct an-

tero-posterior position with occiput posterior and with a pelvic application delivering child. As said in previous part of paper, pelvic application in this position will give a good application but we have the added danger of perineal laceration, if care is not taken. In this regard let me say that though theoretically a posterior occiput delivered as such will inevitably result in deep perineal lacerations, because the largest diameters of foetal head rest on perineum, my personal experience is that this is not true; if we recognize our position and deliver with extreme care, allowing the occiput to come over perineum slowly and thus allow soft tissues a chance to stretch, our laceration is no more than in anterior position; I realize that this is a strong statement, but my belief is that the deep perineal lacerations in posterior positions are due, not so much to the large occipital diameter as to failure to recognize the position and to too rapid a delivery. Assuming neither of the above procedures is possible, we must then procede with head as persistent right occipital posterior. In this latter position, with head well up on perineum, in excavation or just through brim (higher positions will be discussed under High Forceps), we have a choice between forceps reversed and Scanzoni manoeuvre.

Forceps Reversed. In this application, tips of forceps point posterior, towards occiput, and are applied with difficulty; first, because it has technical difficulties in its application, but mainly because it is the reverse of the ordinary and is done so seldom that few become dextrous in its application. In the introduction of blades, forceps are locked outside the body and then reversed so that they now assume position as when application is complete; right hand is inserted into pelvis and locates posterior ear, which is right ear; handle of right blade is then grasped with left hand and inserted first, cephalic application being made as before directed; left hand is then introduced and left or anterior ear located: left blade is then grasped by right hand and application completed, bringing last or left blade above first or right blade, so that lock comes in proper position. It will be noticed that this is the reverse of the anterior applications and thus may be difficult to grasp, at first reading. Traction is now exerted downward until head is well into cavity of pelvis; from this time on, with each traction, forceps are rotated towards mother's right until, with good fortune, head still within the forceps has been rotated to a direct anteroposterior position, with occiput anterior and low on perineum and is delivered as an anterior occiput, without change in original application of forceps. During this traction and rotation, the tips pointing first towards perineal floor and later transverse and then anterior, are likely badly to lacerate soft tissues of mother and should only be attempted after due consideration of difficulties and dangers involved.

The double application or Scanzoni is, under most circumstances, the better choice, and is accomplished as follows: In the first step, forceps were applied as for an O-L-A, which brings tips of blades pointing towards child's face (not occiput) and anterior; left blade of forceps being over posterior or right ear and right blade over anterior of left ear; traction is now made downward until head is well into cavity of pelvis, when rotation is made with each traction, to bring occiput into R-O-T and then R-O-A. When this latter position is reached, tips of forceps have assumed a posterior direction and forceps are now removed and reapplied as for a normal R-O-A position and delivery completed as for this position.

Though I believe this double application is superior to the reverse forceps, it is also one that is difficult and must be done with care and with full realization that injuries to mother and child are common and can be avoided only by gentle, careful manipulation of forceps.

O-L-P. An occiput left posterior is very uncommon; in fact, I do not recall ever meeting one, but the treatment is the same as for O-D-P, only rotation of occiput will be made towards left instead of right, and when forceps are applied in reversed position the right blade will be anterior over right ear (anterior ear in this position); and left blade is applied last and thus on top and is over posterior or left ear. Traction same as in O-D-P, only rotation to left.

Scanzoni in O-L-P brings first left blade anterior over right ear and right blade posterior over left ear, with tips pointing anterior and towards the right. Traction with rotation towards left until O-L-A is reached, and then removal of forceps and delivery as O-L-A.

In an O-L-P position some men have advocated rotation, not to left and O-L-A, but to right and through 90° to O-R-A; application

and traction are same for this, axis of rotation alone differing.

Transverse Position. In this condition occiput points either towards right or left, with sagittal suture parallel to transverse diameter of pelvis; in this position a pelvic application is contra-indicated and we must use a cephalic. The ideal cephalic application or bi-parietal will bring one blade of forceps under pubes and other over sacrum and by reason of the anatomical conformation of the pelvis, the symphysis or promontory of sacrum may act as bar to the proper bi-parietal application and, in this case, we may make an oblique application by direct guidance of cephalic curve of blades. Since, in my experience, the R-O-T is more common than L-O-T, I will describe the former.

R-O-T. Attempt should be made first, to do manual rotation to R-O-A and, that failing, apply forceps. Tips of blades, when applied, point to the right; left blade applied first and is anterior in oblique diameter; cephalic curve of blade lies over left half of temporal bone; right blade posterior over right part of occipital bone. Traction and rotation to O-D-A and delivery as such, as described above. In L-O-T, same thing, only reversed; occiput points towards left; tips of blades point towards left; left blade is posterior and right blade anterior; oblique application as with R-O-T and traction and delivery after rotation to O-L-A.

High Forceps.

Conditions Necessary. Full dilatation of cervix; no great disproportion between size of head and pelvis; outlet which is normal or large enough to permit delivery; conjugate at least 3¼ inches; urgent indication for termination of labor on part of mother or child; full realization of the difficulties and dangers of this operation.

Floating head presupposes inability of head to enter brim and therefore before forceps are attempted, careful examination should be made to be sure no such disproportion exists as to preclude delivery of living child. Wise to consider version, with floating head, if pelvis is normal in size.

Technic. Through completely dilated cervix, grasp head with right hand and rotate to O-D-A or O-L-A, or direct antero-posterior position, using ear as guide to position; make cephalic application, with same technic as in mid position, only be persistent in trying for a good bi-parietal application and if this fails get at least a good oblique application, remembering that with a hard "pull" the danger of compression and slipping is lessened with a bi-parietal application. I believe that a pelvic application on a floating head should never be made; if you cannot get a cephalic application, do version. Assuming good application, now use axis-traction rods and also Walcher's position on the table, both of these (axis-traction and Walcher's) have been described in previous part of paper and should be read again firmly to fix principles in mind. Traction is downward until well into pelvis, when Walcher's is discontinued and line of traction changed to conform with direction for median and low forceps. If head is impacted in brim or partly through brim, if in good position, *i.e.*, O-L-A, O-D-A, or antero-posterior, apply forceps for that position; if transverse or a posterior occiput, try to do a manual rotation or force backward, with gentle manipulation to break up impaction and make floating head of previously engaged head. If neither of above can be done, do a Scanzoni; if transverse, apply as described for transverse position.

Face or Brow. In an extended head presenting face or brow, chin takes place of occiput and all rules are followed as for occiput delivery, remembering this point. If possible, before applying forceps, try to flex head to occiput presentation or try version and in case brow presents try to make it a face.

In cephalic application, blades should be applied parallel to occipito-frontal diameter, so that tips of blades grasp occiput and not neck of child.

Breech. In a rare case it is necessary to place forceps on breech; in this case, a direct application is made by guiding hand to a position over each lateral pelvic region and not one blade over sacrum and the other over pubes, and thus tip, impinging on abdominal soft parts.

RECAPITULATION OF ESSENTIAL POINTS.

Remember axis of inlet at different plane than axis of outlet and that axis of whole pelvis describes a part of circle, with symphysis as centre. Examination of patient should be made before forceps are applied. Position of child and exact application desired

should be visualized before actual introduction of forceps.

Take time to make application and use no force in introduction of blades.

All movements and manipulations must be gentle.

All traction should be intermittent and under control of operator.

In head above brim, at a high level in pelvis or in posterior position or other position which will make difficult forceps probable, remember time spent in locating exact position and obtaining a good application of blades will save time in the end, resulting in less danger to mother and child.

When in doubt as to findings or application, stop and try again or send for assistance; do not run risks when lives are at stake.

EPIDEMIOLOGY OF INFLUENZA.*

BY D. M. LEWIS, M.D., NEW HAVEN, CONN.

IT is history that the failure to establish the cause of pandemic influenza in '89-90 because begun in '92 would not be repeated in the next future one. That such an one has been with us seems but too evident from the morbidity and mortality reports of influenza of the past two months. The opportunity afforded was early recognized by the Public Health Service, by state and municipal health authorities and with, above all, the huge services of the Army and Navy, made an array of forces available which should by now have sufficient evidence to define pandemic influenza, in turn defining the cause of epidemic and endemic influenza. Have we arrived? That we have not is shown by the reported variations of micro-organisms found in different sections of the country, with the further fact that in the same community is a different predominating organism prevailing at various short periods. Thus one week we are told there is very little question but that the influenza bacillus has all the warrants to be followed another week by a denial in that the results are in favor of a streptococcus and in turn that a variety is found such as to demonstrate that the influenza bacillus, the streptococcus, and the pneumococcus are undoubtedly secondary invaders, and a frantic search is instituted for a filterable virus.

Is there, then, any fundamental error which prevents the solution of this timely question? That there is may be shown by the study of the epidemiology rather than the bacteriology only, as the main factor which, as we have just shown, has not solved it. If we are asked today to define influenza we may say that it is either the clinical picture of the least symptoms or the epidemiological characteristics of outbreak and course of spread that determines its presence. All agree, none deny, that the latter view is scientific. Now, based on such, there is traced out for us that influenza was epidemic in Spain in the spring, that it spread to the neighboring countries of Italy, France, Germany, and England, in August being brought to New York City, thence to be spread west and south. The failure to find the influenza bacillus in each and every community proves to the usual mind, not that we do not have epidemic influenza, but that, as in the previous pandemic, the cause has not been found. The point I wish to make is this. Has anyone questioned these accepted facts of a pandemic coming every 20-30 years only—of arising always in the East to travel from community to community,—that the cause must necessarily be one organism which, starting with some unknown access of virulence in the original place of onset, travels true to form and only quits when burned out from lack of susceptible material or from eventual reduction of the original gain of virulence? Such cannot explain the immediate appearance of the disease in epidemic form in this pandemic of the disease in the mountain regions of Peru at the same time that it is epidemic in Spain, to the total exclusion of all other communities of South America—epidemic to the extent that, as with us, it affects practically the entire personnel of the mines and smelting mills of that mountain region, compelling cessation of business. It explains the lesser incidence among those over age 40, but it does not explain a similar lesser incidence under age 20, as being due to an immunity from the pandemic of twenty-nine years ago. Why should not the age of immunity be brought down to 29 rather than 40? It does not explain the historically repeated incidence of a United States troopship having practically the entire outfit come down with influenza in mid-Pacific early in the spring, with deaths limited to the native Filipinos aboard, while an epidemic in the Philippines has just ended at the time the vessel mentioned

* Address to the County Public Health Officers, Nov. 7, 1918.

reaches port filled with these soldiers from the Middle West of this country.

From the viewpoint of these unexplained facts that I have just mentioned, let us consider what was going on in this country, in this state and this community in the early part of 1918. In the late spring I showed that in this year, when there was to be a drive during the summer for saving lives under age 5, that this and neighboring cities of this state had, due to pneumonia and whooping cough with a high respiratory infection, an increased death rate for children under age 5; that the same was true for New York City.[1] Statistics also showed that there was an excess of deaths for pneumonias in adults over 40 over the previous year. It was important for it was at an unusual period,—middle March and April. New York's *Weekly Bulletin* shows that deaths from influenza from an immediately previous weekly rate of from 10-20 went to 40-50, and that while the two excessive death ages were as we have mentioned, it was worthy of attention that the deaths from influenza at ages 15-25 were twice those from 5-15; also remember that at this same period, in various army camps, there was an unusual frequency of deaths from pneumonia, some labelled epidemics as well as what were called epidemics of mild influenza. Statistics now show the same to have been true of apparently isolated communities of every country on the continent as well as England. Further, let me call your attention to the fact that where studied bacteriologically these mild epidemics of late 1917, of 1918, were the same as the same communities presented in the pandemic of later 1918; the varying predominance here of influenza bacilli, there of pneumococci or the streptococci. Note that Rosenow finds in civil life in one community a pleomorphic streptococcus which he previously found in poliomyelitis in 1916, while an adjoining war post shows a hemolytic streptococcus. Again that this pleomorphic streptococcus has been the apparent factor in communities in England and Germany in the epidemics of 1917 and the spring of 1918, as well as in the following encephalitis epidemics in these countries. If now we study the statistics of the pathological findings of the respiratory organs of the last pandemic, the present pandemic, and the immediate preceding epidemics of pneumonia following measles, we find the same lesions. One more inquiry helping to bind the argument I wish to present to you. Why, whether there presents an epidemic of diphtheria, measles, meningitis, grip, or the present pandemic of influenza, is it that the first cases, the first deaths, are not only on the same street but frequently in the same house, even sometimes in the same family where the last epidemic of one of the other diseases a year or two previous started? It is the localization in our community of our first known case which shows us that the special seed from Spain has finally reached us although the occupants are our tenement poor, are not travelers, nor do they have immediately previously, visitors from further "East." Unremarked in an adjoining town are the deaths from typhoid pneumonia in young adults ill but two and three days several weeks in advance of the time set that influenza is epidemic and pandemic; unremarked the fact that these are from "C" street where, last year, there were meningitis and diphtheria.

Never before have we had better facilities for studying respiratory diseases than in over-night new cities—our training camps. We have, or should have learned now from statistics that following any frequency of respiratory infections like tonsillitis and bronchitis, there follows measles, meningitis, scarlet fever, and pneumonia. We have statistics now that show that with meningitis a large part of the first crop may have but tonsillitis cultures showing the infection. The frequency of pneumococcus throats is obscured, as I told you last spring,[2] because the throat culture is negative for diphtheria. There is now wide appreciation of streptococcal sore throats. In those where we have literature we find that the bacteriological content of an army camp of 1917 and 1918 with regard to epidemics and milder infections is duplicated in their pandemic epidemic as well as the fact that there is a lesser dominance of a pneumococcus or a streptococcus not originally there, but brought in by the last incoming draft or transferred body of men. We have, then, the curves of respiratory frequence rising and falling, carrying with them certain diseases, and following there may be other diseases. When we put in these curves the bacteriological content of the influenza bacilli, the pneumococci and the various streptococci there is definitely explained to the epidemiologist their height and their pureness of culture or otherwise, when the past infection of that camp is known. Likewise may be explained secondary waves and the why of

their height or their difference of bacterial content.

Let us go back yet further in time. In 1916 there was epidemic generally over this country the most severe wave of grip since '89-90. Its bacteriology had the same content, its introduction, as I showed in an article following the epidemic,[3] was in the same terms as this pandemic. We were due for the same two- or three-year interval epidemic of grip this year,—its start was later in the year than that of 1916, beginning in March-April. That it was greater in morbidity and mortality should be reasonably explained by the tremendous shifts of population. An added population of one-tenth our previous population should be the same factor as I have shown happens in the army camps. The immensity of the pandemic, as contrasted with the previous one, should be in exact proportion to the increased density of population compared to the control of these various organisms during the interim. The sum total of organisms and the variation found in localities of the various organisms may be measured by the existing content in each community; we come back to each community as having its own "starters." Not a new germ, not a special type of some old friend acquiring mystic properties in the "East," once every generation or so encircling the globe in from one to three years and then disappearing, but our known influenza bacillus, the pneumococci, the streptococci, endemic the world over for centuries apparently, as also epidemic, can explain epidemiologically and bacteriologically, pandemic influenza, if the term influenza is not restricted to those cases or, as all of us have seen, epidemics due to the influenza bacillus. In support of these facts you have the knowledge of a lesser incidence and a lower mortality in this city as compared to our neighboring cities, a measure of the lesson of 1916, the possibilities of the future of that year have been realized in results. Laboratory investigations only rather than field investigations, corroborated by laboratory bacteriology, is the reason why again, as in 1892, the epidemiology of influenza is not determined.

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[1] Infant Mortality: Theory and Results. BOSTON MEDICAL AND SURGICAL JOURNAL, Oct. 17, 1918.

[2] Prevention in Public Health. BOSTON MEDICAL AND SURGICAL JOURNAL, April 25, 1918.

[3] Lessons from the Past and Possibilities from the Future. New York Medical Journal, May 19, 1917.

Book Reviews.

Surgery in War. By ALFRED J. HULL, F.R.C.S. Lieutenant-Colonel, Royal Army Medical Corps; Surgeon, British Expeditionary Force, France; Late Lecturer on Surgical Pathology, Royal Army Medical College, Millbank; and Surgeon, Queen Alexandra Military Hospital; with a Preface by LIEUT.-GEN. T. H. J. C. GOODWIN, C.B., C.M.G., D.S.O., Director-General, Army Medical Service. Second Edition; with 210 Illustrations. Philadelphia: P. Blakiston's Son & Co. 1919.

The object of this book has been to give members of the profession who have not practised war surgery an account of the treatment which has proved efficacious in our hands.

This second edition contains 600 pages. Seven well-known English surgeons are contributors. Many American surgeons are quoted, so that the viewpoint is not entirely British. All the old chapters are rewritten and several new ones are added.

The book is cordially recommended to the profession.

Neurological Clinics. Edited by Joseph Collins, M.D. New York: Paul B. Hoeber. 1918.

This volume consists of a series of clinical exercises selected from a large number presented for discussion by the staff of the Neurological Institute. There are forty-one lessons in all, covering a wide range of functional and organic nervous and mental disturbances. The cases are charmingly presented and make interesting and profitable reading. The diagnostic points and varying symptoms are minutely and carefully described in each individual case. It is interesting to note that this volume is free from so many of the traditional conceptions of nervous diseases and pigeon-holing of symptoms which is a fault of so many text-books of medicine. For completeness of discussion and clearness of clinical presentation, Dr. Collins' chapter on myasthenia gravis deserves special mention.

Neuro-Psychiatry and the War. A Bibliography with Abstracts. New York: National Committee for Mental Hygiene. 1918.

This volume prepared by Mabel Webster Brown, the librarian of the National Committee for Mental Hygiene and edited by Dr. Frankwood E. Williams, is a very useful and complete compendium on the rapidly growing literature on the war neuroses and psychoses. The abstracts are minute and extensive, and as such, the volume is very useful to the neurologist and psychiatrist.

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EFFORTS AT SHOE REFORM.

There has been more or less discussion recently about the absurdity of women's shoes of the prevailing fashion, and efforts are being made to introduce and popularize shoes of more hygienic style than are being worn in the majority of cases at present. A well-balanced foot is necessary in the maintenance of a healthy, well-balanced body; high-heeled and narrow-toed shoes cannot properly balance the body, and cramp the muscles and joints of the foot so that they cannot be exercised as they should be in moving and carrying the body. Not only does the so-called fashionable shoe cause local pain, deformity, and discomfort,—it also is responsible for a great proportion of the back strain, eye strain, and nervous irritability from which many women suffer.

A number of specific efforts at introducing sane and sensible footwear have been made both in Europe and in this country. In France, for instance, it is reported that the Paris Academy of Medicine has issued an appeal to the people to put an end to the fashion of "French" and "Louis Quinze" heels. In America the problem is being taken up with the Y. W. C. A. This organization has a national membership of four hundred thousand to listen to the suggestions of the national board. Two main questions are to be considered: whether the manufacturers can make the shoe desired, and whether sufficient pressure can be brought upon American women to induce them to adopt it. The first matter has been discussed at a conference of manufacturers at the national board Y. W. C. A. headquarters in New York. Once the shoe is ready, the Y. W. C. A. intends to arrange for its wide distribution, so that there will no longer be heard the complaint that the right sort of shoe is not available. The feet of the American nation are one of its weakest points, as the recent draft rejections have shown. Any effort to reform and standardize shoes both for women and for men should receive the encouragement and support which it well deserves.

"TYPHOID MARY."

There has been written by Major George A. Soper and published in the *Military Surgeon* a story of unusual interest about "Typhoid Mary," an individual who illustrates a new phase of the carrier problem and the distribution of communicable diseases. Mary's discovery and ultimate confinement are due to the indefatigable efforts of Dr. Soper in tracing her wandering, destructive career.

In 1906 Dr. Soper was called to Oyster Bay to investigate an outbreak of typhoid fever, which attacked six out of eleven persons in one household, all within seven or eight days. The house was situated among spacious grounds; the food and supply drainage were examined and eliminated as factors. Upon questioning the inmates of the household, it was learned that a new cook had been employed about three weeks before the appearance of the first case of illness. The former cook, Mary, was eventually located, and although she had herself never been ill with typhoid, the reports given by the eight families in which she had worked for the previous ten years showed that typhoid fever had appeared in seven of them.

In 1901, a laundress was taken ill in the

house where Mary worked. In 1902, eight out of ten of a family at Dark Harbor were ill with the disease. Four out of seven servants were attacked in a family at Sands Point, New York, in 1904. Other instances of the disease followed Mary wherever she went, until finally the New York City Health Department detained her as a person dangerous to the community.

In 1910, Mary was released on condition that she should not go again into the food producing business. For a time, she was true to her promise, but after a while she broke her parole and disappeared for five years. During that time it was later discovered that outbreaks had occurred in two different families. The investigation of an outbreak of twenty-five cases of typhoid at the Sloane Hospital for Women in New York disclosed the fact that Mary had been employed there as a cook for three months. She disappeared at the first sign of the disease, but was finally found and removed to the Riverside Hospital of the New York Department of Health, where she has been held in detention ever since. Mary's history illustrates a new problem to be considered in the distribution of communicable diseases.

THE SIGNIFICANCE OF CANCER STATISTICS.

DURING the period of the war, active research work on cancer has been hindered by the shortage of mice, which the Government has needed in great numbers for identifying the different types of organisms in pneumonia and in making tests for poisonous gases. One aspect of the problem, however, has been studied by Dr. Francis Carter Wood, Director of the George Crocker Special Research Fund of Columbia University, who has criticized the present system of recording deaths from cancer and has pointed out the advantages to be gained by reporting the disease by age groups rather than for the population as a whole. To illustrate the discrepancies in the system now followed, he has commented upon figures relating to England and Wales and to this country.

Dr. Wood believes that the fact that the cancer death rate in England and Wales has shown such an enormous increase recently may be attributed to the circumstance that the greater part of the male population below the age of forty-five had been removed to France and Belgium, thus leaving a predominance of old-age groups at home. Statistics including both old and young, show that for the three years preceding the war, the death rate among men was ninety-one per one hundred thousand; in 1916, it was ninety-six per one hundred thousand. During the same period before the war, the rate among women was ninety-nine per one hundred thousand, and in 1916 it had risen to one hundred and one per one hundred thousand.

It is the opinion of Dr. Wood that we may expect a similar phenomenon in this country during the next year or two. He suggests that in order to obtain a more accurate statistical survey of cancer, the cancer death rate should be considered by age groups rather than for the population as a whole. In illustration of this, he states that the death rates from cancer in the New England States have been distorted for a number of years and have given a false impression of the incidence of the disease. In 1914 the death rate in the United States was 79.4 per one hundred thousand. Vermont reported the highest mortality rate, 109.9, compared with 51.5 per one hundred thousand in Montana. Dr. Wood has pointed out that this difference in the rates may be attributed primarily to the fact that the population of Montana is made up to a large extent of the young pioneer type, whereas in Vermont the inhabitants are on the whole distinctly older. When the crude mortality of Vermont from 1908 to 1912, 102.2 per one hundred thousand, is corrected on the basis that the proportion of the population of the ages of forty-five and over is twenty-seven per cent. for Vermont, whereas it is 12.2 per cent. for Montana, the revised death rate for Vermont falls to seventy per one hundred thousand, a rate lower than the corrected death rate for the States of Massachusetts, Rhode Island, New York, Minnesota, California, and Connecticut. The corrected death rate for Montana, on the other hand, rises to 53.7.

It is interesting to observe that cancer statistics show the highest rate in the most civilized countries such as Switzerland, Holland, and Scotland, and the lowest in Russia, Hungary, and Bohemia. Dr. Wood believes that again statistics are undoubtedly deceiving, as it is probable that the difference is due to more careful diagnosis of cancer in more civilized countries.

AMERICAN RED CROSS TUBERCULOSIS COMMISSIONS.

The achievement of the American Red Cross Commissions in checking tuberculosis in Italy and France gives evidence of the spirit of friendly criticism and coöperation by which it was made possible. The work of investigation in Italy was carried on in three main fields,—school hygiene, child labor, and housing. The assistance offered by the Italian School Hygiene Association in allowing visiting and close inspection of existing conditions and in giving the American Commission full access to the rules and regulations already in force greatly aided the Red Cross workers in making a thorough and an intelligent study of the situation. It is plain that Italy needs to introduce and enforce some means of teaching her people even the most elementary rules of hygiene; suggestions for improving the present system have been made by the American Commission and have met with the approval of the Italian health authorities. The report of the Commission states that already measures have been adopted for emphasizing the prevention rather than the cure of tuberculosis; legislation has been formulated which aims to protect infant welfare, maintain during school life a regard for hygienic conditions, and direct the employment of young boys and girls so that they may not be forced to accept work which will be detrimental to their future health.

In France, also, a Commission investigated the local conditions, and, by the aid of grants of money, organized a chain of health centers for the provision of special treatment. Here, too, the importance of training school children to observe the fundamental principles was emphasized, and carried out by the coöperation of children, parents, and teachers. Lists were made of hygienic rules to be followed, such as personal cleanliness, plenty of fresh air at night, and daily exercise,—a series of tasks in which the children manifested a real pride in performing faithfully. Perhaps one of the most far-reaching results of the work of the Commission in France was the establishment of a system whereby local practitioners are to carry out the work which has been outlined in some parts of the country by their American colleagues.

That the criticism and suggestions offered by the American Commissions to health authorities in Italy and France have been received gratefully by these countries and have been made in some instances the basis of future reform, indicates the value of international coöperation in matters pertaining to the investigation and prevention of disease. It is to be hoped that the efforts of the American Red Cross Tuberculosis Commissions may prove to be only the promise of success in carrying out even more extensive activities which we may anticipate for the future.

MEDICAL NOTES.

Baby Feeding Experiment.—The Baby Hygiene Association of Boston is planning to conduct an experiment with milk as the principal ingredient of diet of six infants who have been carefully selected for observation. The experiment will be carried out at the Roxbury Crossing station of the Association, and will be continued during three months. The babies will be carefully weighed, measured, and given medical supervision, and a careful analysis of improvements will be made to determine the value of the milk.

During the past year, more than 3,800 children under six years of age were weighed and measured by a large corps of physicians and nurses. The children were placed under the observation of the Baby Hygiene Association, and after a study of one year, 500 were found to be below normal; of these, 281 were selected for care at the Roxbury station. Considerable improvement has been made by weekly conferences and home visits, advice on feeding, proper clothing, and the observance of general hygienic rules.

There are several nationalities represented in the six children chosen for extended observation. Each baby will be given a quart of pure milk each day as a part of a well-balanced diet. There will be examinations every day, and frequent weighings. Home conditions will be observed during the three months in order that the experiment may be given a fair trial.

Conference on Mental Hygiene.—A conference on mental hygiene was held under the auspices of the Massachusetts Society for Mental Hygiene in Pittsfield, Massachusetts, on September 29. The purpose of this Society is to educate the community in the principles of mental health, foster the mental health of normal children, protect the adolescent from men-

tal and nervous breakdown, give intelligent treatment to the feeble-minded, and promote the study of mental disease and defect in their various forms and in their social and economic relations. It endeavors also to improve the standards of care for those suffering from or in danger of developing mental disorder, and to disseminate knowledge concerning their causes, treatment, and prevention.

The following papers were read at the conference, and will be published in a later issue of the JOURNAL:

"The Meaning of Mental Hygiene," by Frankwood E. Williams, M.D.; "Mental Hygiene and Childhood," by William H. Burnham, Ph.D.; "The Relation of the State Hospital to the Community," by John A. Houston, M.D.; and "Some Special Problems of Mental Hygiene with Special Reference to the Work of this Society," by A. W. Stearns, M.D.

AWARD OF DISTINGUISHED SERVICE MEDAL TO DR. JOEL E. GOLDTHWAIT.—Dr. Joel E. Goldthwait was awarded the Congressional Distinguished Service Medal on September 10 by Major-General Clarence R. Edwards, for exceptionally meritorious and distinguished service while serving with the American forces in France. The citation read: "The award is made for special work in organizing the development section in France." Dr. Goldthwait had charge of the development battalion of the 26th division and of the thousands of men who were sent to the reconstruction and development camp. In his capacity as orthopedic surgeon he trained the men suffering from flat feet and other minor causes which rendered them unfit for service at the front. Three villages in France were given over to Dr. Goldthwait, and in five weeks, forty per cent. of the men under his care and treatment were restored to health and service. A few weeks later more men were returned to their companies until seventy per cent. of the men who had been classed as non-combatable were returned to the trenches. Dr. Goldthwait's achievement well deserves this tribute to his service.

Colonel J. R. Kean, of the Medical Corps of the United States Army, in summarizing the various phases of Army service in which Colonel Goldthwait attained distinction, has mentioned the three following ways in which his initiative proved to be of especial value: (1) in simplifying and standardizing splints so that only a few types were necessary and they could be supplied in greater abundance and more easily used; (2) in applying graduated exercises and correct positions for remedying physical disabilities; (3) in suggesting the establishment of reconstruction hospitals where maimed soldiers, instead of being discharged for their disabilities, could have them corrected as far as medical science could accomplish that result.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending October 11, 1919, the number of deaths reported was 171 against 1285 last year, with a rate of 11.20 against 85.43 last year. There were 33 deaths under one year of age against 101 last year.

The number of cases of principal reportable diseases were: Diphtheria, 54; scarlet fever, 26; measles, 55; whooping cough, 17; typhoid fever, 6; tuberculosis, 40.

Included in the above were the following cases of non-residents: Diphtheria, 10; scarlet fever, 9; tuberculosis, 5.

Total deaths from these diseases were: Diphtheria, 3; scarlet fever, 1; whooping cough, 1; tuberculosis, 10.

Included in the above were the following non-residents: Diphtheria, 1; tuberculosis, 1.

Influenza cases, 11; influenza deaths, 2. Last year: Influenza cases, 1,520; influenza deaths, 850.

TUBERCULOSIS CAMP AT SALEM.—At the end of September, the Salem Association for the Prevention of Tuberculosis ended the fourteenth season of its camp activities at Salem Willows. The work of this organization was begun by the Salem Associated Charities and the society became incorporated in 1914. At the present time, Josiah H. Gifford is president of the Association and Miss Rosamond Lynch is dispensary nurse. During the summer there was an average number of forty patients a day. Plenty of fresh air was made possible by means of sleeping tents and open air pavilions. The camp is maintained chiefly from the funds collected each year by the sale of carnation pinks. The noonday lunches which are served to the patients and the disinfectants

have been furnished by the Salem Board of Health hospital.

During the winter, this Association conducts a dispensary and patients are visited in their homes by the nurse. During the influenza epidemic the Society was especially active, and still is caring for patients who developed tuberculosis as a result of the disease.

Hyde Park Dental Clinic.—The Hyde Park Dental Clinic, which has been in operation for the past two months under the direction of Dr. George Farrell, is proving to be of great service to the community. It is open for the care of persons of all ages on Wednesday and Saturday for the benefit of families whose income is under a certain amount. Up to the present time, there have been admitted one hundred and fifty-four patients, a great many of whom are school children. This is the only clinic of its kind in the community, and the fact that there is a waiting list of one hundred shows that it is appreciated.

Brooks Cubicle Hospital.—The Brooks Cubicle Hospital which is being erected on Corey Hill for the treatment of pneumonia patients was opened September 29. The hospital consists of a main building with two wings, between which there is an open court. Each room is open on three sides to sunlight and fresh air, and twenty patients can be cared for at one time. The total cost of the building will be about $150,000, of which $130,000 has been contributed. Dr. Thomas Durell of Somerville is to be chief of the staff of physicians, and Miss Elizabeth Pelton the superintendent of nurses.

The efficacy of the treatment which will be followed in the Brooks Cubicle Hospital has already been proved by Dr. Brooks, who had constructed similar buildings in South Boston last year. They were later taken down and moved to Cambridge, then to Somerville, where they have been re-erected on the grounds of the Somerville Hospital and are in active use at the present time. The superiority of an open-air hospital in the treatment of pneumonia was demonstrated on Corey Hill during the influenza epidemic. When the regular hospitals of Boston and the emergency hospitals were overcrowded, a camp hospital was improvised on Corey Hill. Of the patients cared for, only twelve per cent. died, and this death rate was reduced to one and one-half per cent. later; this is quite a contrast to the death rate of fifty per cent. to sixty per cent. in the hospitals of other districts. Because of the apparent advantages of the open-air treatment, nine of the principal towns of Massachusetts established similar hospitals under the direction of units from Corey Hill. Other units carried the treatment farther away, one reaching the State of Idaho.

NEW ENGLAND NOTES.

Castine General Hospital.—The Castine General Hospital, at Castine, Maine, was founded by Dr. Harrison Briggs Webster of Boston. Dr. Webster graduated from Harvard Medical School in 1909. He accompanied Dr. Grenfel on his mission in Labrador and Newfoundland and became greatly interested in that type of medical practice. On his return to New England, he visited the sick in the little island hamlets on the coast of Maine where the inhabitants could secure no medical advice and assistance. He finally settled in Castine, where he bought a large house and began to build up a hospital for the benefit of the hundreds of people who would otherwise have been neglected in their remote homes. Dr. Webster left this work to enter the service, in which he gave his life. In 1918, with the rank of major, he sailed overseas as director of ambulances and later was made regimental surgeon of the 47th infantry. While conducting an expedition to the first line trenches to bring back the wounded, he was killed by a bursting shell.

But the noble work which was begun in the little town of Castine is still being carried on in the spirit of its founder. The hospital has been incorporated and will be known as the Castine General Hospital. It will be supported by an appropriation from the state, by two appropriations and private funds, and by its own income.

Maine State Conference of Charities and Corrections.—At the annual meeting of the Maine State Conference of Charities and Corrections held in Portland on September 25, Dr. Eugene Kelley, Commissioner of the Massachusetts Board of Health, discussed the institution of sex instruction in public schools. Dr. Kelley is reported to have opposed this mass instruction, maintaining that the home should be the place in which to provide sex education, either through the parent, the pastor, or the family physician.

In speaking of the films which are frequently presented, Dr. Kelley advocated the exhibition of such pictures by the Government in the army camps and among the men in the naval service, but expressed the belief that it was dangerous to display them in theatres to young people. Dr. Kelley emphasized the community's responsibility for venereal diseases, but urged conservatism in viewing the problem, stating that statistics are sometimes greatly exaggerated.

Correspondence.

PORTABLE X-RAY APPARATUS.

Mr. Editor:—

As an individual having had a considerable contact with portable x-ray apparatus for eighteen years past and as a member of the first joint-committee appointed by the Surgeon-General for the devisal of standard x-ray equipment for army use, may I be allowed briefly to comment upon certain points dealt with in the article of Dr. W. K. Coffin, which appeared in the JOURNAL of October 2? As it so happens, the primal point therein constitutes the gist of the article and is presented, in summary, by the statement that the "Army bedside x-ray unit" forms, with certain modifications, the basis for a much-to-be-desired portable apparatus.

While I am freely in accord with the general opinion that the Army bedside unit furnishes, at present, a most effective method for bringing to the bed-fast patient a relatively potent source of x-rays, *where a sufficient current supply is available*, I assert, nevertheless, that, since this apparatus is useless without such sufficient supply, it is not a portable unit in the proper sense of the term.

By stating, moreover, that the Army bedside unit differs from "other portable apparatus" in that it entails the use of a transformer instead of a high-frequency coil, the author of the article conveys to the reader his assumption that all other portable apparatus is constructed so as to produce an induced discharge of high frequency. Such an assumption is erroneous. No roentgenologist of experience, I believe, today regards the Tesla discharge seriously as a source of x-rays. Its fluoroscopic effect is usually brilliant, but its radiographic efficiency is extremely low.

Veritable portable units, furnishing their own current through the mediumship of accumulators, have been used for years with most excellent results in all cases wherein the accessory appliances mentioned by Dr. Coffin, in enumerating the limitations of the bedside unit, are not necessary. An extremely efficient type was designed and described by Caldwell in 1902: another type has been used by me since the middle of the last decade and by at least one of my Boston colleagues, with reasonably uniform success, and at no undue expense to the patient. The only unusual outlay has been for travel and time. Experience and skill should form the basis upon which to ask recompense for such expenditure.

Since, thus, it is not self-contained, the bedside unit has not been regarded by the X-ray Division of the Surgeon-General's Office as of use where true portability is required. Otherwise, there would have been no necessity of designing the Army portable unit, one of the three standardized equipments for the medical service, which furnishes its own current up to any required amount.

Unit devices for the generation and application of x-rays, to be truly portable, must embrace equally portable sources of electrical energy, in order that the operator may be thoroughly independent of a current supply which may or may not exist amid the surroundings of the patient. Thus equipped, he is able to pursue his investigations under any possible condition; whether aboard ship, on moving railroad trains, or in the depths of the backwoods. The occasional necessity for working in a "kerosene lamp district" is only too well known to the average operating surgeon, and he will agree with me, I am sure, that therein are found cases which often have desperate need of medical aid on the spot.

Respectfully yours,
PERCY BROWN, M.D.

RECURRENCE OF INFLUENZA EPIDEMIC.

New York, Oct. 11, 1919.

Mr. Editor:—

In your editorial of October 9, 1919, you indicate the general care as to prevention and treatment in the event that influenza shall soon again attack us. I regret very much that you do not mention one remedy which is not a specific but which will act more favorably and efficiently than any other, both as a preventative and curative drug in influenza. It is salicylate of ammonium, given promptly and in sufficient doses. To my mind, there is no question as to its utility and advantages. This I have dwelt upon and explained previously, but, unfortunately, those whose authority rules in matters of health have not tested the salicylate of ammonium as I have advised its use, and hence it has not had the wide endorsement which its value deserves. Perhaps this timely letter may become effective in making my colleagues everywhere do as I most earnestly wish. In addition to the use of salicylate of ammonium internally, I would emphasize most strongly the value of the perforated zinc inhaler when properly and sufficiently worn and medicated, which is at once more curative and more protective than any other inhaler of which I have any knowledge.

BEVERLEY ROBINSON, M.D.

SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—A stated meeting of the Society will be held at the Boston Medical Library, 8 The Fenway, on Wednesday, October 29, at 8.15 P.M.

1. Business: Election of Nominating and Auditing Committees.

2. There will be three fifteen-minute papers:

"Types of Diseased Conditions Most Frequently Seen in the Teeth, and Their Diagnosis." Leroy M. S. Miner, M.D., D.M.D.

"Teeth from an Orthopedic Point of View," Robert W. Lovett, M.D.

"The Relation of the Teeth to the General Health," Charles H. Lawrence, Jr., M.D.

There will be a general discussion following the papers.

Guests will be welcome at the second part of the meeting, which will begin at 8.45 P.M.

JOHN BAPST BLAKE, M.D., *President*.
GEORGE GILBERT SMITH, M.D., *Secretary*.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY.—Stated meeting, United States Hotel, Boston, Thursday, November 6, 1919, 11.30 A.M. Reader, Major F. B. Granger, M.D., (Surgeon-General's Office, Washington, D. C.). Subject: Physical Reconstruction in Military and Civil Hospitals (Illustrated by photographs), for Dr. F. C. Granger, Randolph.

Censors will meet at 2 P.M. to examine candidates for Fellowship. Candidates should make application to the Secretary at least a week before examination.

DR. C. A. SULLIVAN, *Secretary*, South Braintree.